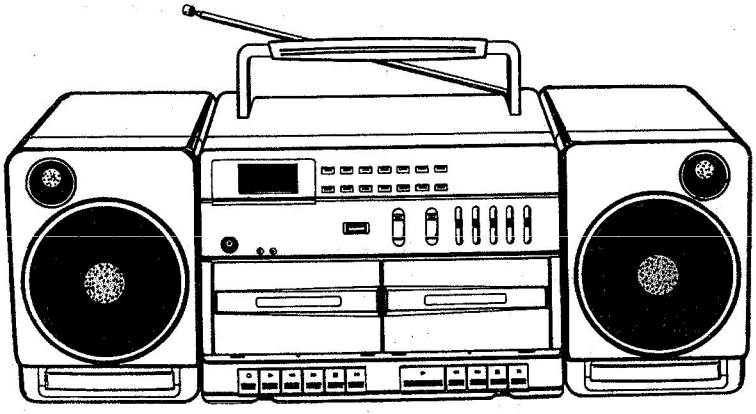
SAMSUNG Electronics

SERVICE MANUAL

MODEL: PD-790

DTS STEREO RADIO DOUBLE CASSETTE RECORDER



PD-790

SPECIFICATION

RADIO

Frequency range	FM: 87.5-108MHz
	AM(MW): 530-1610KHz
	(531-1602)KHz
	LW: 146-281KHz
	SW: 5.95-15.6MHz
I.F.	FM: 10.7MHz
	SW/AM(MW)/LW: 450KHz
Antenna	FM/SW: Telescopic rod antenna
	AM(MW)/LW: Ferrite bar antenna

TAPE

Track system	:	4 track 2 channel
Recording system	:	AC bias (DECK A)
Erasing system	:	Magnetic erasing (DECK A)
Monitor system	:	Variable monitor
Frequency response	:	Normal 50-6300Hz
		CrO_2/METAL (PB) 50-10000Hz
Tape speed	:	4.75cm/sec (Normal speed)
		9.5cm/sec (High speed)
Tape drive system	:	Capstan belt driven
Tape loading system	:	Front loading
Motor system	:	DC synchronous
		2 speed motor (DC 9V)

GENERAL

Frequency response	:	20-20000Hz
Speaker	:	Woofer : ø 100mm x 2 (3.2 Ω)
		Tweeter : ø 27mm x 2
Max output	:	4W (2W x 2)
Power source	:	AC: See label rating
		DC: 9V (D, UM1, HP2 x 6)
		DC: 4.5V (AA x 3)
		– For memory back up.
Power consumption	:	10W
Dimension	:	594(W) x 205(H) x 165(D)mm
Weight	:	3.5Kg (Without batteries)
Headphone jack	:	ø 3.5mm

Design and specifications are subject to change without notice.

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SERVICING NOTES

1. Prevent shock hazard by unplugging power supply cord before opening cabinet.
2. Avoid repairing under direct sunshine and heat which may cause cabinet, transistor and IC to be transformed or misoperate.
3. Use a soft cotton swab moistened with warm water or neutral cleaner when parts of unit need to be cleaned.
4. Be sure to use identical replacement parts, especially for critical parts in the unit since many parts in the unit have special safety characteristics marked by ⚠ in the circuit diagram and parts list.
5. Avoid repairing the set near TV or any other magnetic forces.
6. Disconnect immediately the plug from wall socket during electric storm to reduce the risk of damage.
7. Be careful of electrostatic source when using control IC.
8. Remember that if AC power source is unplugged without inserting 3 small dry cell batteries (AA type), the CLOCK and MEMORY Function will not operate.

GENERAL INFORMATION

1. DIGITAL TUNING SYSTEM
   The station will be searched quickly and by just pressing the button.

2. MEMORY FUNCTION
   A maximum of 10 stations can be memorized by the unit (FM). Therefore selection can be made at your own convenience.

3. MEMORY SCAN
   You will find out what was memorized in the unit by pressing the ME/SCAN button and the 10 stations which have been memorized will be heard for about 5 seconds each.

4. TIMER FUNCTION
   If a certain time is set, the unit will turn on and off automatically.

5. DIGITAL CLOCK
   Digital clock will operate without connecting AC/DC power source if you use small batteries.

6. CONTINUOUS PLAY
   Transfer of playback from DECK B to DECK A is made automatically.

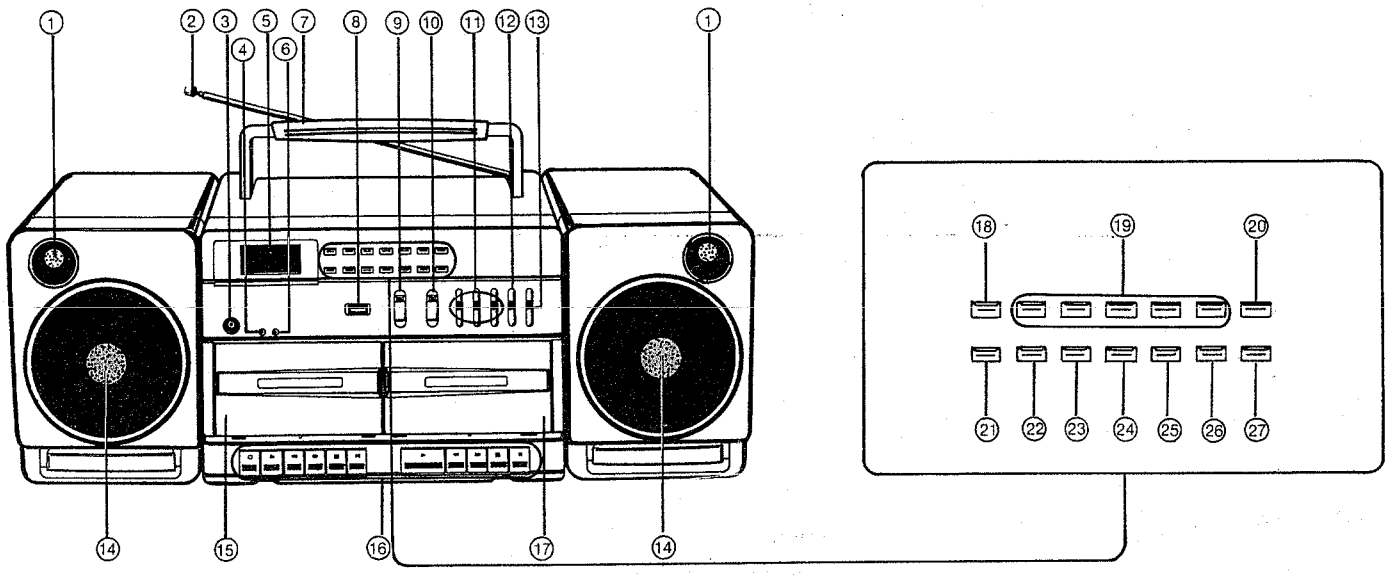
7. HIGH SPEED DUBBING RECORDING
   Recorded tapes can be copied at double the speed of normal speed.

8. 3 BAND GRAPHIC EQUALIZER
   You can appreciate the sound at your own taste by controlling the graphic equalizer.

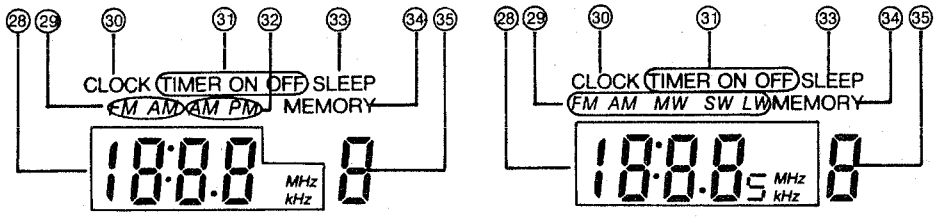
9. DETACHABLE SPEAKER
   Speakers can be used separately at your convenience.

NAMES OF CONTROLS

FRONT PANEL



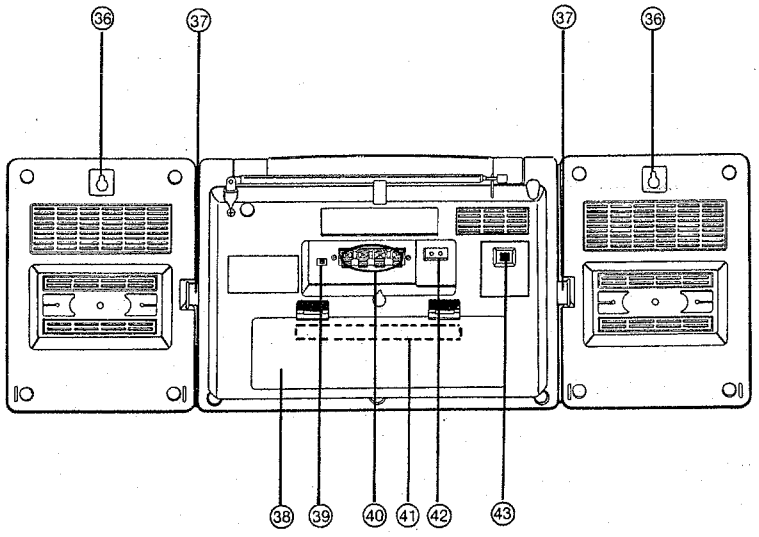
LIQUID CRYSTAL DISPLAY



FOR FM/AM BAND

FOR FM/SW/AM OR FM/MW/LW BAND

REAR PANEL

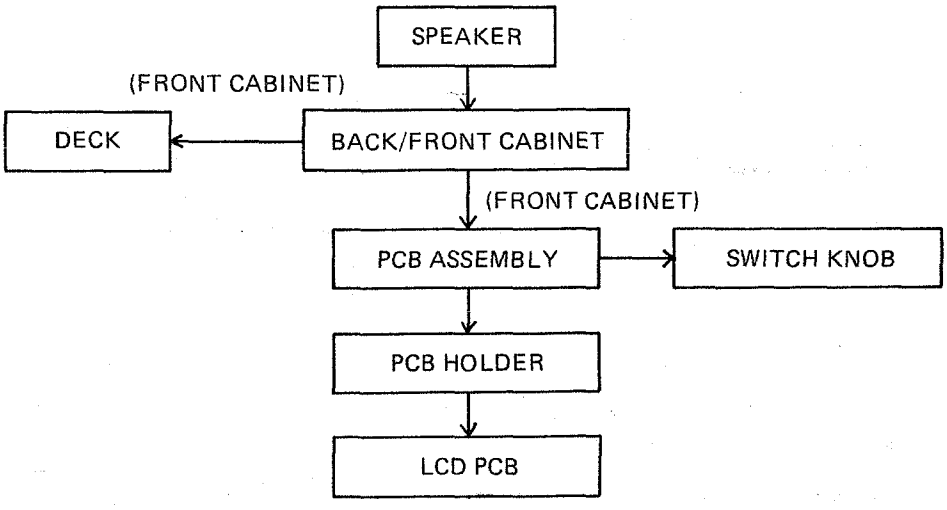


1. Tweeter (L, R)
2. Telescopic Rod Antenna
3. [PHONES] Jack (Headphones)
4. [MIC] (Built-in Microphone)
5. LCD (Liquid Crystal Display)
6. [FM-ST] Indicator (FM-Stereo)
7. Handle
8. [TIMER] Button
9. [FUNCTION] Selector
10. [BAND] Selector
11. [GRAPHIC EQUALIZER] Controls
12. [BALANCE] Control
13. [VOL] Control (Volume)
14. Speaker (L, R)
15. Deck A Door
16. DECK Operation Buttons
    - ● RECORD Button (Only Deck A)
    - ► PLAY Button
    - ◄◄ REWIND Button
    - ►► FAST FORWARD Button
    - ■ STOP/EJECT Button
    - ▮▮ PAUSE Button
17. Deck B Door
18. [SLEEP] Button
19. Preset Buttons [M1.6 – M5.10]
20. [MIN/UP] Button
21. [SHIFT] Button
22. [CLOCK ON/OFF] Button
23. [MEMO/CLOCK ADJ] Button (Memory/Clock Adjustment)
24. [ME/SCAN] Button (Memory scan)
25. [AUTO] Button
26. [FAST] Button
27. [HOUR/DOWN] Button
28. Frequency/Time indicator
29. Band Indicator
30. [CLOCK] Indicator
31. [TIMER ON/OFF] Indicator
32. [AM/PM] Indicator (option)
33. [SLEEP] Indicator
34. [MEMORY] Indicator
35. Preset Channel Indicator
36. Wall Mounting Hole (L, R)
37. Speaker Locking Knob (L, R)
38. Battery Compartment
39. FM MODE Selector (STEREO/MONO)/TAPE SELECTOR (CrO_2-METAL PB./NORMAL)/ BEAT CUT Switch
40. Speaker Terminal
41. Clock Battery Case
42. [AC IN ~] Jack
43. [VOLTAGE SELECTOR] (option)

ABBREVIATION

AC	:	Alternating Current
Addr	:	Address
AGC	:	Automatic Gain Control
ALC	:	Automatic Level Control
AM	:	Amplitude Modulation
AMP	:	AMPlifier
ANT	:	ANTenna
ASSY	:	ASSembly
BAL	:	BALance
BLK	:	BLacK
BLU	:	BLUe
BPF	:	Band Pass Filter
BRKT	:	BRacKeT
CF	:	Ceramic Filter
ch	:	channel
cm	:	centimeter
COM	:	COMmon
CON MIC	:	CONdenser MICrophone
D	:	Depth
dB	:	deciBel
DC:	:	Direct Current
DEC	:	DECoder
DET	:	DETector
DEV	:	DEViation
DTS	:	Digital Tuning System
EA	:	EAch
E-HEAD	:	Erase HEAD
FF	:	Fast Forward
F/F	:	Flip Flop
Fig	:	Figure
FM	:	Frequency Modulation
GND	:	GrouND
GRN	:	GReeN
GRY	:	GRaY
H	:	Height, High
Hz	:	Hertz
IC	:	Integrated Circuit
IF	:	Intermediate Frequency
IFT	:	Intermediate Frequency Transformer
I/O	:	Input/Output
KHz	:	KilloHertz
Kg	:	Kilogram
L	:	Left, Low
LCD	:	Liquid Crystal Display
LED	:	Light Emitting Diode
LPF	:	Low Pass Filter
LW	:	Long Wave
Max	:	Maximum
MHz	:	MegaHertz
min	:	minimum
MIX	:	MIXer
mm	:	millimeter
MOD	:	MODulation
MPX	:	MultiPleX
MW	:	Medium Wave
NF	:	Negative Feedback
ORG	:	ORanGe
OSC	:	OSCillator
PB	:	PlayBack
PCB	:	Printed Circuit Board
PLL	:	Phase Lock Loop
P/T	:	Power Transformer
R	:	Right
RAM	:	Random Access Memory
REC	:	RECord
REG	:	REGulator
REW	:	REWind
RF	:	Radio Frequency
ROM	:	Read Only Memory
R/P	:	Record/Play
sec	:	second
SSG	:	Standard Signal Generator
ST	:	STereo
ST/EJT	:	STop/EJecT
SW	:	SWitch, Short Wave
TP	:	Test Point
TR	:	TRansistor
TRANS	:	TRANSformer
V	:	Volt
VIO	:	VIOlet
VCO	:	Voltage Controlled Oscillator
VOL	:	VOLume
Vpp	:	Voltage peak to peak
VR	:	Volume
Vref	:	REFerence Volgate
V/SEL	:	Voltage SELector
VTVM	:	Vacuum Tube Volt Meter
VVC	:	Voltage Variable Capacitance
W	:	Watt, Weitht
WHT	:	WHiTe
X	:	crystal
YEL	:	YELlow

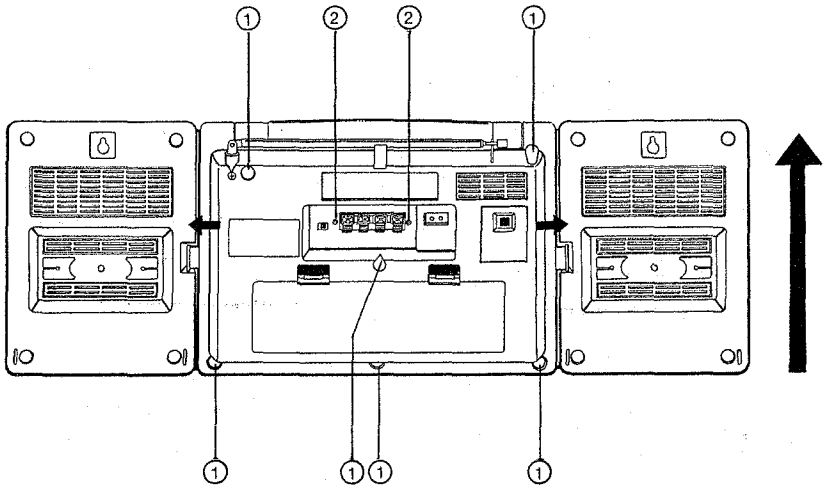
■ DISASSEMBLY INSTRUCTION



- **Before disassembling the unit.**

  Remove batteries and AC cord.

- **Disassembly procedure**

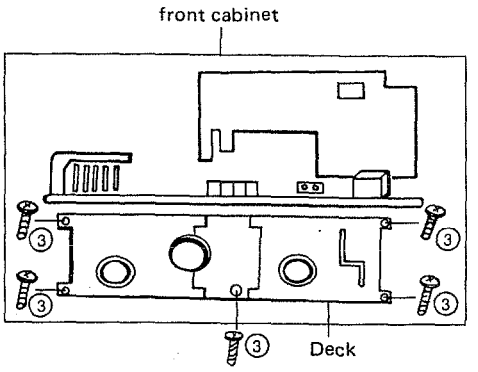


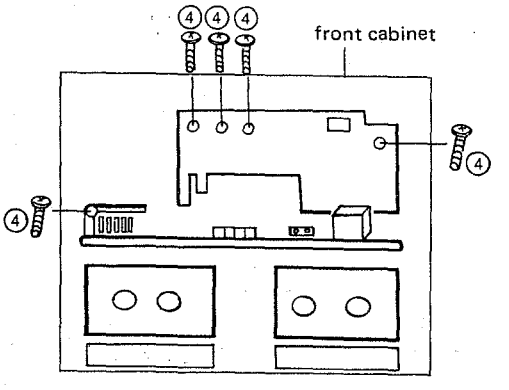
1. Main speaker

1. Disconnect speaker wire from speaker jack.
2. Pull speaker locking knob with finger and separate speaker by pulling it upward.

2. Front/Back cabinet

1. Remove 6 screws (①) from the back cabinet.
2. Remove 2 screws (②) at both sides of speaker jack.
3. Pull back cabinet about half way and disconnect connector connecting main PCB to FM rod antenna.
4. Disconnect two connectors connecting battery PCB to main PCB.



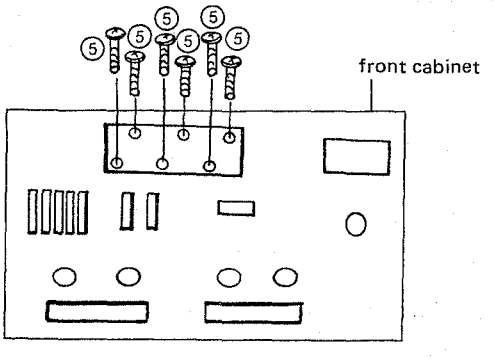


3. Deck

1. Remove 5 screws (③) connecting front cabinet to deck.
2. Disconnect 3 connectors connected to main PCB and open A.B door.

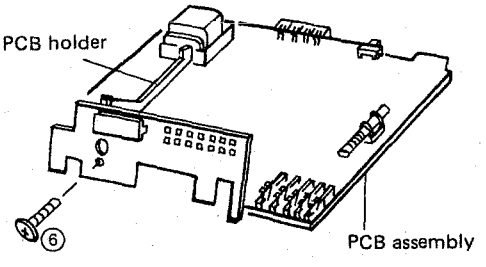
4. PCB assembly

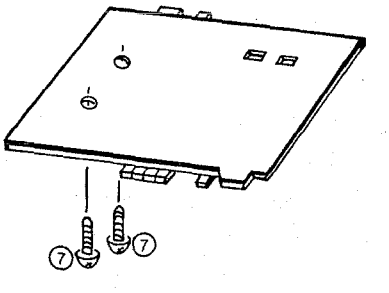
1. Remove 5 screws (④) connecting front cabinet to LCD PCB.
2. Take out the PCB assembly.



5. Switch knob

1. Remove 6 screws (⑤) from the top of front cabinet.





6. LCD PCB

1. Remove 1 screw (⑥) from the LCD PCB.
2. Remove 2 screws (⑦) from the pattern side of the main PCB and pull up the PCB holder.
3. Pull LCD PCB up and remove.

■ BASIC CIRCUIT OPERATION

This section briefly explains the operation of the Digital Tuning System (D.T.S) which will help you repair the unit.

1. BASIC OPERATION OF DIGITAL TUNING SYSTEM

1) Function

① DTS CONTROLLER (IC701)
It is composed of a LCD operating part, key matrix part controlled by user, control part that receives data from the tuner, compares the data and corrects some errors after comparing them and the part which carries out the function user wants. (refer to IC's block diagram).

② LPF (Low Pass Filter, Q703, Q704)
It directly controls voltage going into varactor controlled by the DTS controller. That is, it receives error correction signals from the DTS controller and controls DC voltage coming from DC/DC converter (Q301, Q302, T301), and varies voltage going into the varactor, searching the frequency required by DTS controller and maintaining it.

③ DC/DC CONVERTER (Q301, Q302, T301)
It is a circuit maintaining the basic voltage to vary the varactor diode and it converts voltage from low to high. (9–10V)

④ FM OSC (Q705), AM OSC (Q706), IF BUFFER AMP (Q702)
It makes DTS controller recognize by amplifying oscillation and IF signal and it is equivalent to outside data received by DTS controller.

⑤ VARACTOR DIODE (D3, D4, D202, D203)
It is a diode which varies it's capacitance by reverse voltage and it corresponds to varicon of existing analog tuning system.

2) FM OPERATION (Receiving frequency of 89.1MHz)

① Set the unit 89.1MHz with key matrix. It is shown on LCD and it is equivalent to data input.

② If the unit receives 95.9MHz, local oscillator (D3) of FM front end (IC1) oscillates frequency of 106.6MHz (95.9MHz + 10.7MHz).

③ The frequency you would like to receive (89.1 + 10.7MHz) is recognized in the DTS controller. If the frequency read by ② is different from the one required by the DTS controller, the voltage applied to the varactor is changed until the frequency desired by DTS controller can be obtained by generating error correction signal commensurate to the phase comparator through the pin 33 of IC701 and by controlling LPF. This operation is repeated until the frequency correctly corresponds with the one desired by the DTS controller and the voltage going into varactor is converted by producing an error correction signal. When the frequency conforms to the one desired, all operation stops, of course and the voltage applied to varactor is maintained.

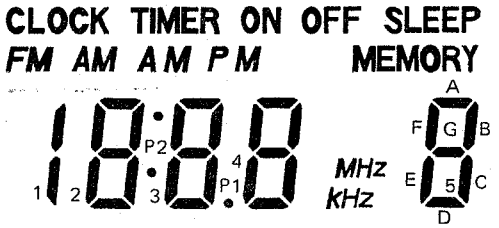
④ AM OPERATION
If the desired frequency is not acquired after counting frequency of local oscillator, the voltage applied to varactor (D202, D203) by LPF after being controlled by DTS controller is converted.
Converting voltages going into varactor is repeated until the frequency desired is obtained.

2. LCD SEGMENT DESCRIPTION

If one or all of the LCD segments (see segment diagram below) don't work, check if IC701 and LCD pins are properly connected refering to the chart below.

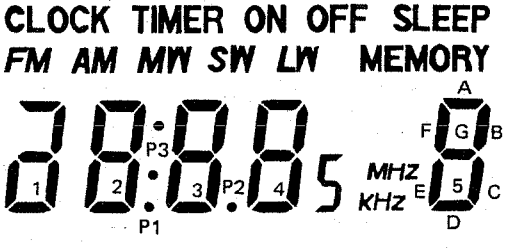
1) 2 BAND

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
COM 1	COM 1				C5	D5	C4	D4	C3	D3	C2	D2	PM	AM	AM KHz
COM 2		COM 2			G5	E5	G4	E4	G3	E3	G2	E2	P2		FM P1MHz
COM 3			COM 3		B5	F5	B4	F4	B3	F3	B2	F2	BC1		
COM 4				COM 4	A5	ME-MORY	A4	SL-EEP	A3	OFF	A2	ON	TI-MER		CL-OCK



2) 3 BAND

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
COM 1	COM 1				C5	D5	C4	D4	C3	D3	C2	D2	C1		MW	AM	P1	5
COM 2		COM 2			G5	E5	G4	E4	G3	E3	G2	E2	AD EG 1				P3	FM P2
COM 3			COM 3		B5	F5	B4	F4	B3	F3	B2	F2	B1	LW				KHz
COM 4				COM 4	A5	ME-MORY	A4	SL-EEP	A3	OFF	A2	ON	TI-MER	SW			CL-OCK	MHz



3. MICOM PIN DESCRIPTION

: TC9307AF-004 (DTS CONTROLLER)

PIN NO.	PIN-NAME	PIN-FUNCTION
1, 2, 43, 44	K0–K3	4 bit input port for inputting key matrix
3–8	T0–T5	6 bit output port for key return timing
9	V_{LCD}	Offer 3V regular voltage for operating LCD
10–13	COM1–COM4	Output port for operating LCD with 1/4 duty, 1/3 bias.
14–23	S1–S9	Output port for operating LCD with 1/4 duty, 1/3 bias.
24, 25	S10/P22, S11/P21	Output port of I/O and segment output
26, 27	P20/S12, P13/S13	Output port of I/O and segment output
28–30	P10–P12	I/O port with 3 bit
31	MUTE	Offer muting control signal of 1 bit
32	IF_{IN}/IN	Input port of IF signal of 16 bit IF counter Input frequency: 0.3–12MHz (0.4Vp-p min)
33, 34	DO1, DO2	Output port of phase comparator of PLL
35	$\overline{INH}$	Select radio mode "H" level: radio on mode "L" level: radio off mode
36	FM_{IN}	Prescaler input port during FM mode 50–130MHz (VCO output) comes in
38	AM_{IN}	Programmable counter input during AM mode

4. REPAIR POINT ABOUT DEFECT

SYMPTOM	CAUSE	CHECK POINT
Wrong lettres and numbers displayed on LCD.	Crystal malfunction.	① Check the voltage of pin No. ⑨ at IC701. ② Check the frequency of pin No. ㊵ , ㊶ (75KHz).
No tuning operation and only noise is heard.	① DTS controller does not permit oscillation frequency. ② LPF malfunction.	① Check the voltage at Q705 (FM), Q706 (AM). ② Check Q703, Q704.
Only low frequency received. Failure of AUTO program.	DC/DC converter not operating ① Bad sensitivity. ② IF buffer amp not operating.	Check Q301, Q302, T301. ① Check alignment. ② Check Q702.

■ ALIGNMENT LOCATION

1. INSTRUMENTS AND TOOLS

1) AM STANDARD SIGNAL GENERATOR
   : 100KHz – 35MHz, 400Hz, 30% MOD
2) FM STANDARD SIGNAL GENERATOR
   : OUTPUT IMPEDANCE 75 OHMS, 400Hz, 22.5KHz DEV.
3) FM/AM IF GENERATOR: 10.7MHz, 450KHz
4) OSCILLOSCOPE
5) OUTPUT METER: LEVEL METER OR AC VOLTMETER. (VTVM)
6) FREQUENCY COUNTER
7) LOOP ANTENNA
8) DUMMY LOAD (3.2 OHMS)
9) DC VOLT METER

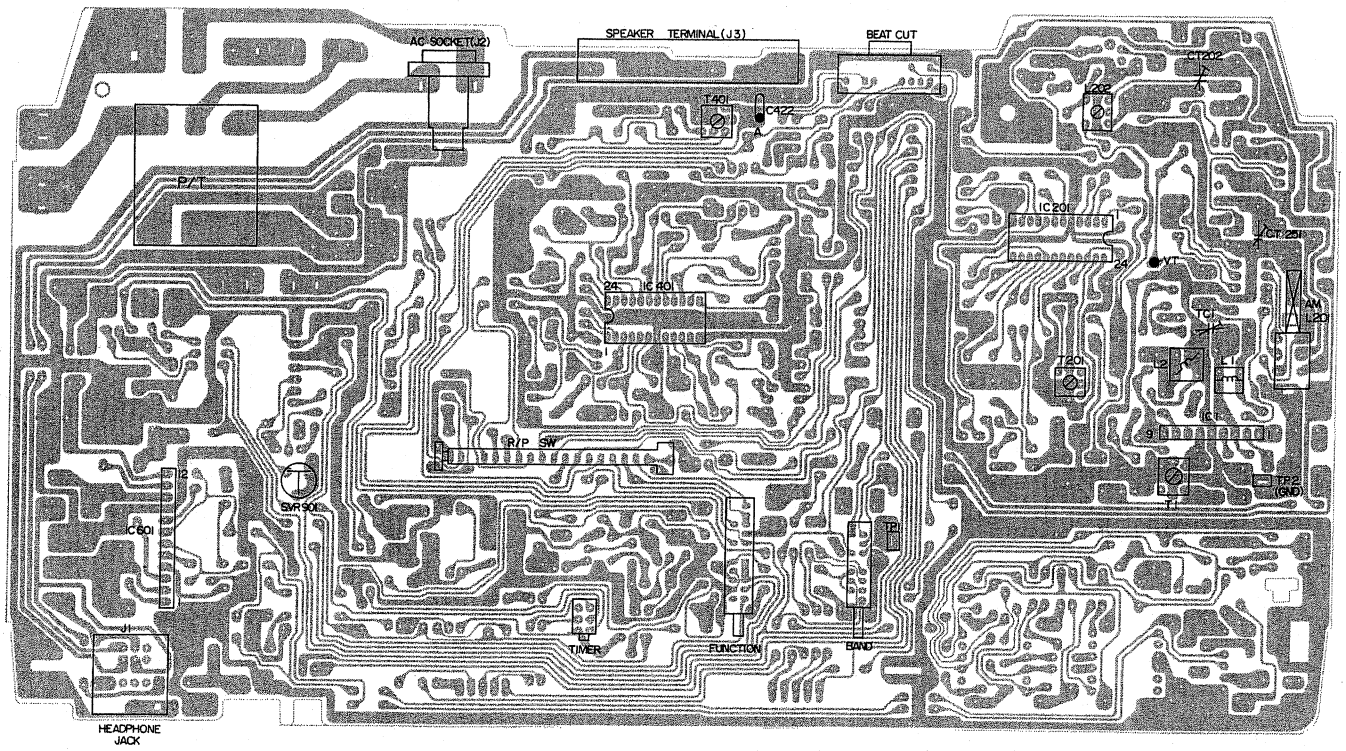
2. IMPORTANTS

1) Check the power source voltage.
2) Set the "FUNCTION" and "BAND" switch to a band to be aligned.
3) The "EQUALIZER", "VOLUME" and "BALANCE" control should be turned to the mid position.
4) The standard modulation is the 30% with 400Hz signal for AM and is the 22.5KHz deviation with 400Hz signal for FM.
5) The standard output is 50mW (3.2 OHMS).

3. LOCATION OF ADJUSTMENT POINT (MAIN PCB: PARTS SIDE)

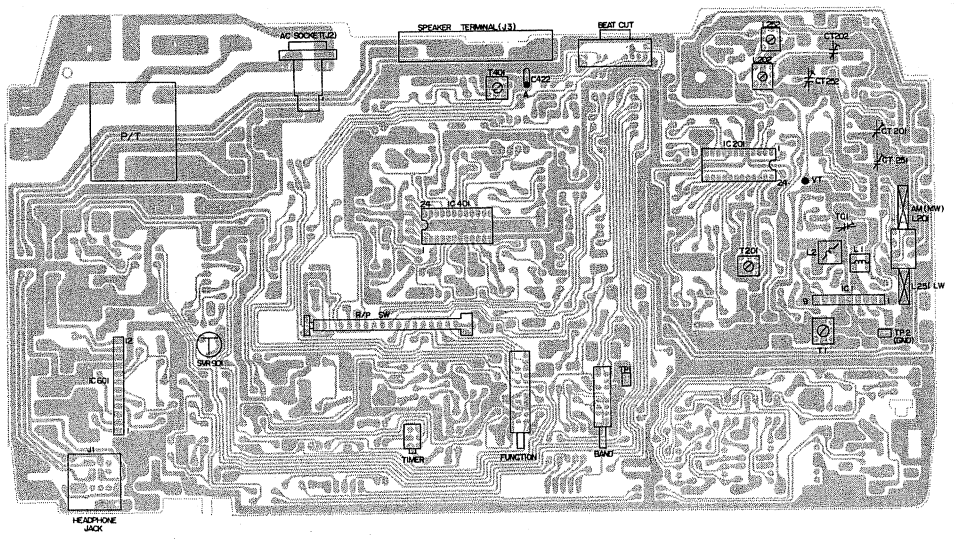
1) FM/AM BAND

T1	:	FM IFT COIL (10.7MHz)
T201	:	AM IFT COIL (450KHz)
L1	:	FM RF COIL (90MHz)
L2	:	FM OSC COIL (87.5MHz)
TC1	:	FM ANT TRIMMER (106MHz)
SVR901	:	TAPE SPEED ADJUSTMENT
A	:	REC BIAS ADJUSTMENT
L201	:	AM ANT COIL (600 or 603KHz)
L202	:	AM OSC COIL (530 or 531KHz)
CT202	:	AM OSC TRIMMER (1610 or 1602KHz)
CT251	:	AM ANT TRIMMER (1400 or 1404KHz)
VT	:	POINT OF CHECKING VOLTAGE
T401	:	RECORD BIAS COIL (50KHz)



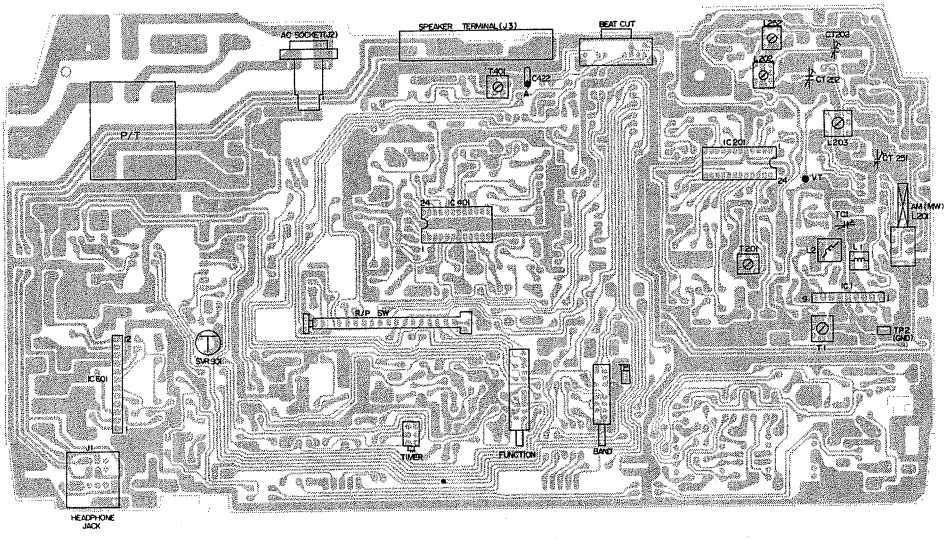
2) FM/MW/LW BAND

T1	:	FM IFT COIL (10.7MHz)
L2	:	FM OSC COIL (87.5MHz)
L1	:	FM RF COIL (90MHz)
TC1	:	FM ANT TRIMMER (106MHz)
T201	:	MW/LW IFT COIL (450KHz)
L202	:	MW OSC COIL (531KHz)
CT202	:	MW OSC TRIMMER (1602KHz)
L201	:	MW ANT COIL (603KHz)
CT251	:	MW ANT TRIMMER (1404KHz)
L252	:	LW OSC COIL (146KHz)
CT252	:	LW OSC TRIMMER (281KHz)
L251	:	LW ANT COIL (164KHz)
CT201	:	LW ANT TRIMMER (263KHz)
VT	:	POINT OF CHECKING VOLTAGE
SVR901	:	TAPE SPEED ADJUSTMENT
T401	:	RECORD BIAS COIL (50KHz)
A	:	REC BIAS ADJUSTMENT



3) FM/SW/AM BAND

T1	:	FM IFT COIL (10.7MHz)
L2	:	FM OSC COIL (87.5MHz)
L1	:	FM RF COIL (90MHz)
TC1	:	FM ANT TRIMMER (106MHz)
T201	:	SW/AM IFT COIL (450KHz)
L252	:	AM OSC COIL (530 or 531KHz)
CT252	:	AM OSC TRIMMER (1610 or 1602KHz)
L201	:	AM ANT COIL (600 or 603KHz)
CT251	:	AM ANT TRIMMER (1400 or 1404KHz)
L202	:	SW OSC COIL (5.95MHz)
CT202	:	SW OSC TRIMMER (15.6MHz)
L203	:	SW ANT COIL (6.5MHz)
VT	:	POINT OF CHECKING VOLTAGE
SVR901	:	TAPE SPEED ADJUSTMENT
T401	:	RECORD BIAS COIL (50KHz)
A	:	REC BIAS ADJUSTMENT



■ ADJUSTMENT

1. FM ADJUSTMENT

Circuit to be Adjusted	Measuring Instrument & Arrangement	Step	S.S.G Frequency	Radio Freq. Setting	Adjusting point	Adjust for
Intermediate Frequency	Connect the FM IF generator to body of IC1, and take out the signal from FM IF output terminal. (see Fig. 1)	1	10.7MHz	87.5MHz (LOW END)	T1 FM IFT COIL	Max gain and symmetrical "S" curve
		2	Repeat step 1 until the "S" curve doesn't change from low frequency to high.			
Frequency coverage	Connect FM signal generator to "FM ANT (TP1)" thru a 75 ohm matching network. Connect speaker to output meter (VTVM) across 3.2 ohm load. (see Fig. 2)	3	87.5MHz	87.5MHz (LOW END)	L2 FM OSC COIL	VT: 2.0V ± 0.05V
		4	108MHz	108MHz (HIGH END)	Need not adjust.	VT: 7.8V–9V confirmation
		5	Repeat steps 3 and 4 to obtain optimum frequency range.			
Tracking	Same as frequency coverage.	6	90MHz	Tune to signal (90MHz)	L1 FM RF COIL	Maximum output
		7	106MHz	Tune to signal (106MHz)	TC1 FM ANT TRIMMER	Maximum output
		8	Repeat steps 6 and 7 to obtain suitable sensitivity at 90MHz and 106MHz.			

FM IF OUTPUT: IC201 PIN NO. 19 or 13

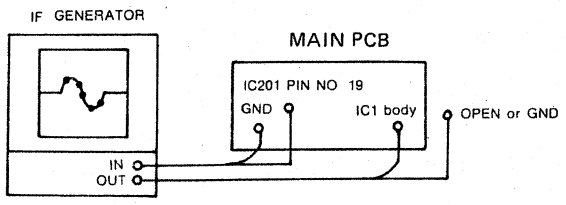


Fig. 1 FM IF

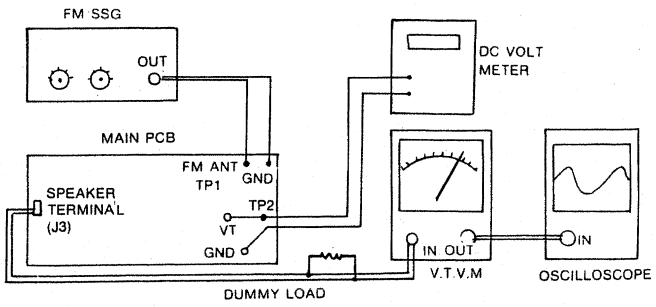


Fig 2. FM COVERAGE, TRACKING

5. RECORDING/PLAYBACK HEAD AZIMUTH ADJUSTMENT.

1) Use test tape MTT 113C for azimuth adjustment.
2) Connect VTVM and oscilloscope to speaker terminal (J3) of main PCB (Fig. 7).
3) Insert the test tape into DECK A and play.
   Adjust adjustment screw like figure 8 so the output becomes maximum value. If the output of each channel differs, adjust to the same phase.
4) Follow the same procedure 1) – 3) described above for DECK B.
5) Lock the adjustment screw with the adhesives after adjustment.

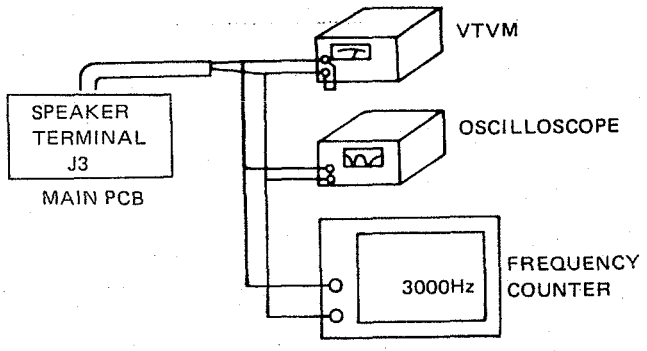


Fig. 7 AZIMUTH. SPEED

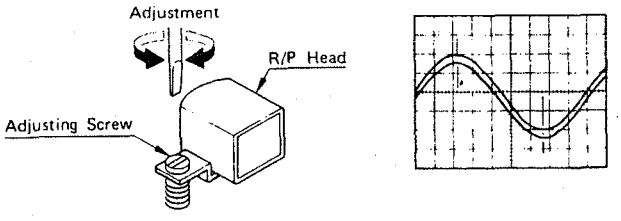


Fig. 8 AZIMUTH ADJUSTMENT

6. TAPE SPEED ADJUSTMENT

1) Connect frequency counter and oscilloscope to speaker terminal (J3) as shown Fig. 7 so that the waveform and frequency can be observed.
2) Adjust semi-volume SVR901 so the frequency counter reads 3KHz while playing the test tape (MTT-111, 3KHz) in DECK B.
3) Insert a test tape into DECK A and check if the frequency counter reads 3KHz ± 30Hz.
4) Insert a test tape into DECK B and set DECK A in the recording position. See if tape speed reaches about 6KHz (5400Hz – 6600Hz) in the high speed dubbing.

7. RECORDING BIAS ADJUSTMENT.

1) Connect the frequency counter to C422 of T401 (Bias Coil) as shown in the figure 9.
2) Press [RECORD] button (●) of DECK A (or push R/P switch) and adjust T401 so the frequency becomes 50KHz.

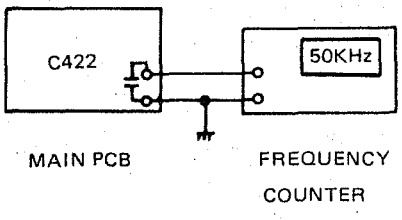


Fig. 9 RECORD BIAS

4. 3 BAND (FM/SW/AM) AM/SW ADJUSTMENT

Circuit to be Adjusted	Measuring Instrument & Arrangement	Step	S.S.G Frequency	Radio Freq. Setting	Adjusting point	Adjust for
IF	IF adjustment is the same as 2 band's.					
AM frequency coverage	Same as 2 band's. (see Fig. 4)	1	530KHz (531KHz)	LOW END (530 or 531KHz)	L252 AM OSC COIL	VT: 1.0V ± 0.05V
		2	1610KHz (1602KHz)	HIGH END (1610 or 1602KHz)	CT252 AM OSC TRIMMER	VT: 8.0V ± 0.05V
		3	Repeat steps 1 and 2 several times.			
AM tracking	Same as 2 band's. (see Fig. 4).	4	600KHz (603KHz)	Tune to signal (600 or 603KHz)	L201 AM ANT COIL	Maximum output
		5	1400KHz (1404KHz)	Tune to signal (1400 or 1404KHz)	CT251 AM ANT TRIMMER	Maximum output
		6	Repeat steps 4 and 5 to obtain suitable sensitivity at 600KHz (603KHz) and 1400KHz (1404KHz).			
SW frequency coverage	Connect the AM(SW) signal generator to the SW ANT terminal (TP1) thru SW dummy ANT. Connect the speaker output to the VTVM across the 3.2 ohm load. (see Fig. 5. Fig. 6)	7	5.95MHz	Tune to signal (5.95MHz)	L202 SW OSC COIL	VT: 2.8V ± 0.05V
		8	15.6MHz	Tune to signal (15.6MHz)	CT202 SW OSC TRIMMER	VT: 8.0V ± 0.05V
		9	Repeat steps 7 and 8 several times.			
SW tracking	See Fig. 5, Fig. 6.	10	6.5MHz	Tune to signal (6.5MHz)	L203 SW ANT COIL	Maximum output
		11	14MHz	Tune to signal (14MHz)		

3. 3 BAND (FM/MW/LW) MW(AM)/LW ADJUSTMENT

Circuit to be Adjusted	Measuring Instrument & Arrangement	Step	S.S.G Frequency	Radio Freq. Setting	Adjusting point	Adjust for
IF	IF adjustment is the same as 2 band's.					
MW(AM) frequency coverage	Same as 2 Band's.					
MW(AM) tracking	Same as 2 band's.					
LW frequency coverage	See Fig. 4.	1	146KHz	Tune to signal (146KHz)	L252 LW OSC COIL	VT: 1.0V ± 0.05V
		2	281KHz	Tune to signal (281KHz)	CT252 LW OSC TRIMMER	VT: 4.6V ± 0.05V
		3	Repeat steps 1 and 2 several times.			
LW tracking	See Fig. 4.	4	164KHz	Tune to signal (164KHz)	L251 LW ANT COIL	Maximum output
		5	263KHz	Tune to signal (263KHz)	CT201 LW ANT TRIMMER	Maximum output
		6	Repeat steps 4 and 5 to obtain suitable sensitivity at 164KHz and 263KHz.			

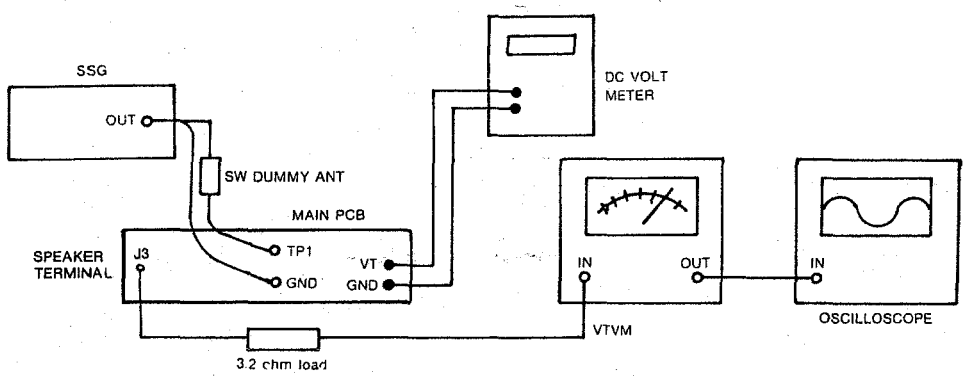


Fig 5. SW COVERAGE, TRACKING

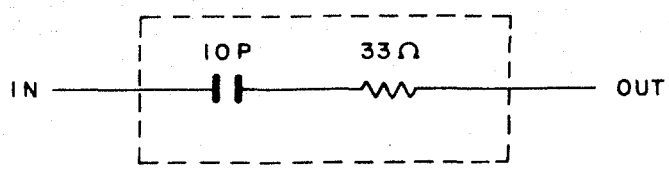


Fig 6. SW DUMMY ANT

2. 2 BAND (FM/AM) AM ADJUSTMENT

Circuit to be Adjusted	Measuring Instrument & Arrangement	Step	S.S.G Frequency	Radio Freq. Setting	Adjusting point	Adjust for
Intermediate Frequency	Connect the FM/AM IF generator to the loop ANT. Couple the AM ANT coil close to the loop ANT and take the signal from AM IF out point (IC201 pin NO 19) (See Fig. 3).	1	450KHz	Tune to the LOW END (530 or 531KHz)	T201 AM IFT COIL	Maximum output and best "V" curve.
		2	Repeat until no further improvement can be made.			
AM frequency coverage	Connect the AM signal generator to the loop antenna, VTVM and oscilloscope as Fig. 4.	3	530KHz (or 531KHz)	Tune to the LOW END (530 or 531KHz)	L202 AM OSC COIL	VT: 1.3V ± 0.05V
		4	1610KHz (or 1602KHz)	1610 or 1602KHz (HIGH END)	CT202 AM OSC TRIMMER	VT: 7.8V ± 0.05V
		5	Repeat steps 3 and 4 several times.			
AM Tracking	See Fig 4.	6	600KHz (603KHz)	Tune to signal (600KHz or 603KHz)	L201 AM ANT COIL	Maximum output
		7	1400KHz (1404KHz)	Tune to signal (1400KHz or 1404KHz)	CT251 AM ANT TRIMMER	Maximum output
		8	Repeat steps 6 and 7 to obtain suitable sensitivity at 600KHz (603KHz) and 1400KHz. (1404KHz).			

AM IF OUTPUT: IC201 PIN NO 19 or 13

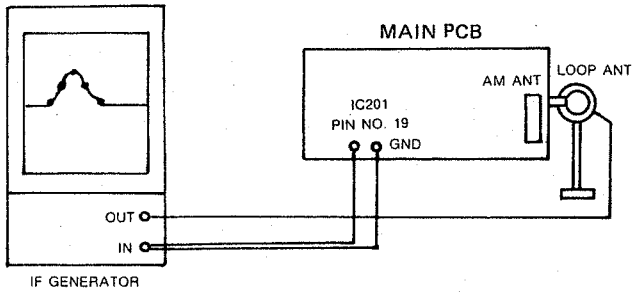


Fig 3. AM IF

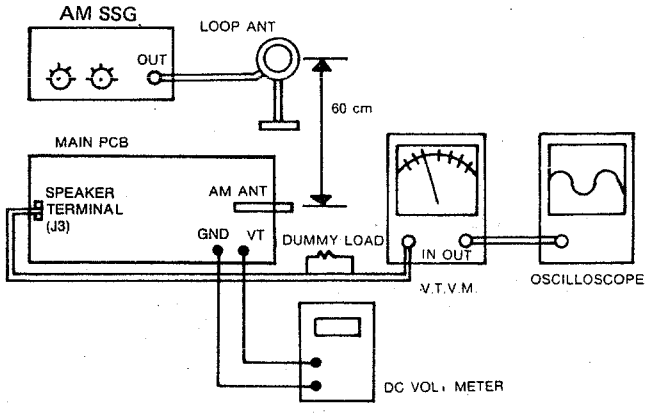
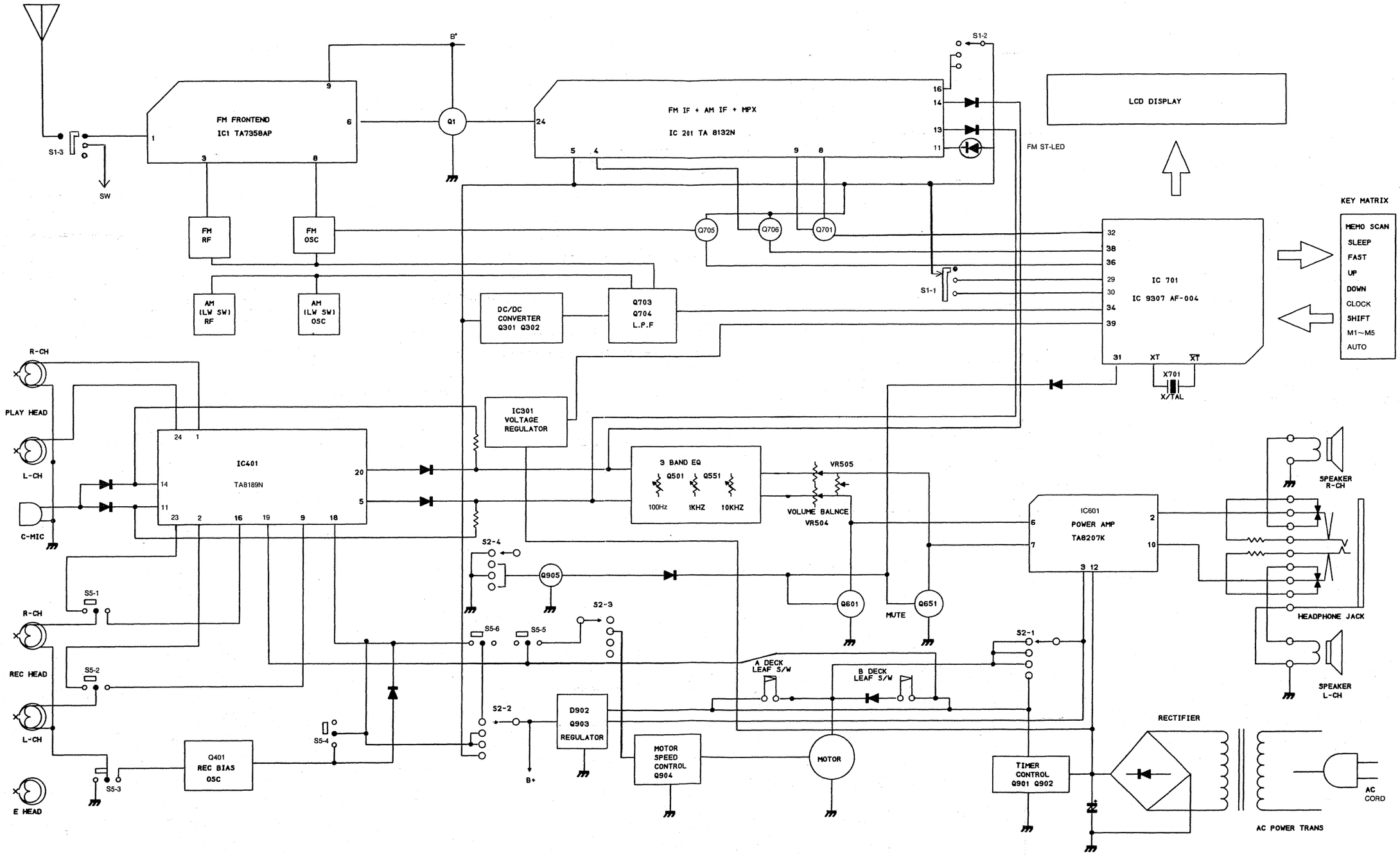


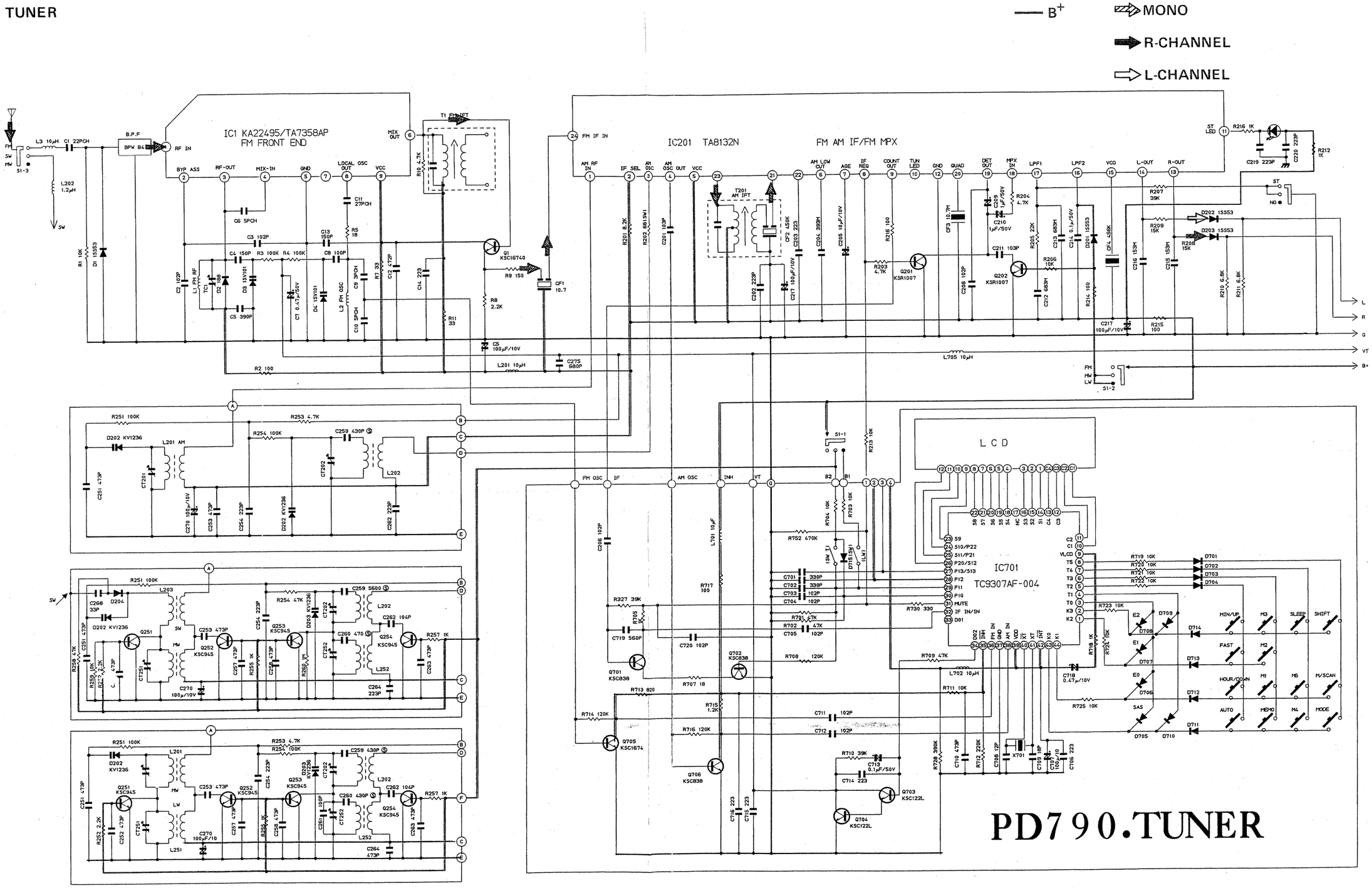
Fig. 4 AM COVERAGE, TRACKING

BLOCK DIAGRAM

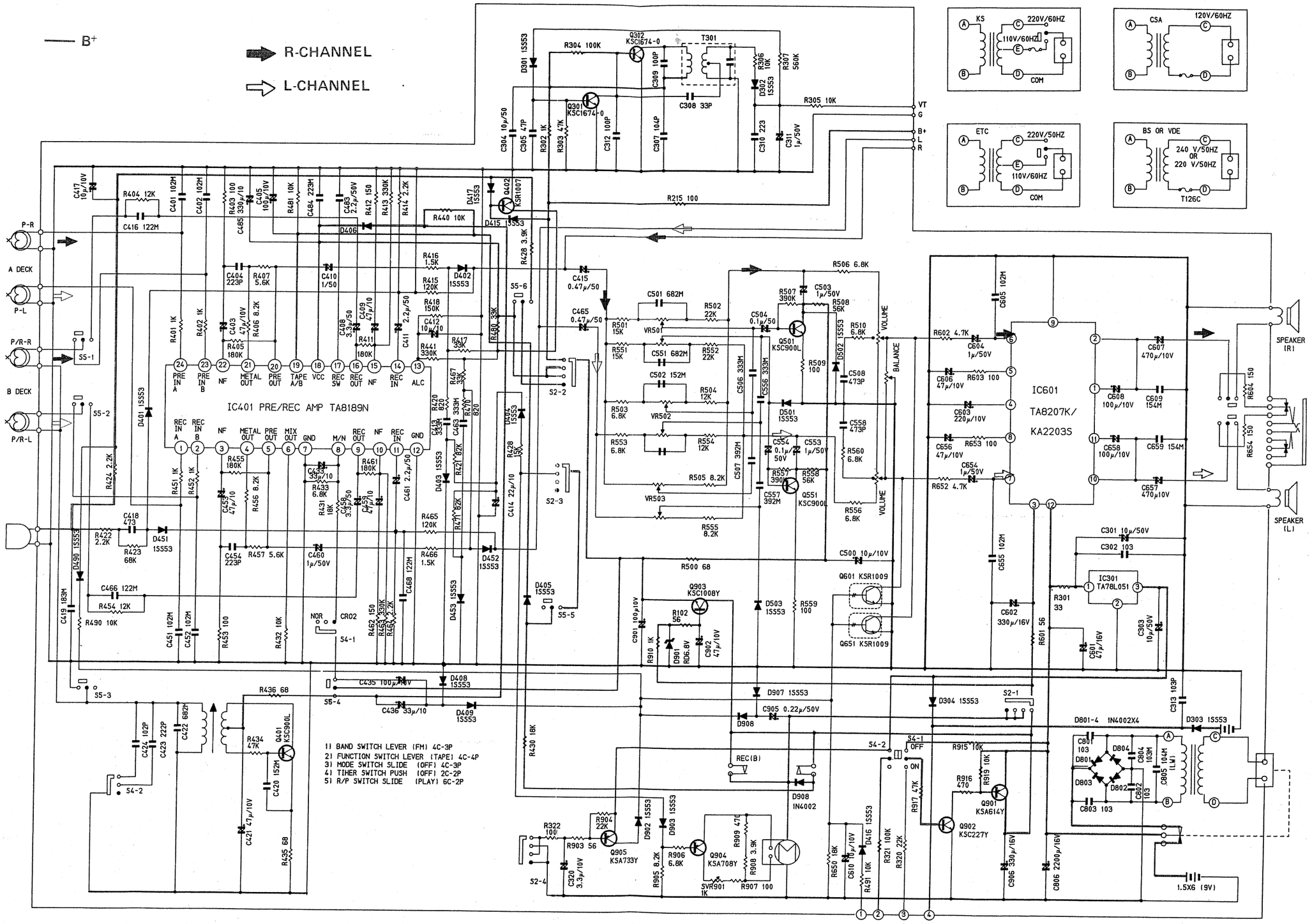


■ SCHEMATIC DIAGRAM

1. TUNER



2. MAIN


B+
R-CHANNEL
L-CHANNEL
IC401 PRE/REC AMP TA8189N
IC601
TA8207K/
KA2203S
1) BAND SWITCH LEVER (FM) 4C-3P
2) FUNCTION SWITCH LEVER (TAPE) 4C-4P
3) MODE SWITCH SLIDE (OFF) 4C-3P
4) TIHER SWITCH PUSH (OFF) 2C-2P
5) R/P SWITCH SLIDE (PLAY) 6C-2P
KS 220V/60HZ 110V/60HZ COM
CSA 120V/60HZ
ETC 220V/50HZ 110V/60HZ COM
BS OR VDE 240 V/50HZ OR 220 V/50HZ T126C
SPEAKER (R)
SPEAKER (L)
1.5X6 (9V)

■ VOLTAGE CHART

IC1: KA22495/TA7358AP — **Unit: Volt**

PIN	1	2	3	4	5	6	7	8	9
FM	1	1.72	3.94	1.69	0	4.15	3.2	3.9	3.98

IC201: TA8132N

PIN	1	2	3	4	5	6	7	8	9	10	11	12
FM	4.18	4.15	4.17	4.18	4.18	3.53	0.7	0	4.18	0	3.59	0
AM	4.33	4.31	4.34	4.04	4.35	3.74	0.2	0	4.35	1.59	2.82	0
PIN	13	14	15	16	17	18	19	20	21	22	23	24
FM	0.9	0.9	3.54	3.42	3.3	0.63	0.89	3.4	4.28	4.1	4.29	4.29
AM	0.9	0.9	3.86	5.15	4.2	0.63	1.36	3.9	4.3	3.63	4.36	4.36

IC701: TC9307AF-004

PIN	1	2	3	4	5	6	7	8	9	10	11
FM	0	0	0	0	4.7	4.7	4.7	4.7	1.8	3.23	3.23
AM	0	0	0	0	4.7	4.7	4.7	4.7	1.8	3.2	3.2
PIN	12	13	14	15	16	17	18	19	20	21	22
FM	3.2	3.2	3.2	3.2	3.2	4.7	3.2	3.2	3.2	3.2	3.2
AM	3.2	3.2	3.2	3.2	3.2	4.7	3.2	3.2	3.2	3.2	3.2
PIN	23	24	25	26	27	28	29	30	31	32	33
FM	3.2	3.2	3.2	0	4.7	0	0	0	0	0	1.8
AM	3.2	3.2	3.2	0	0	0	0	0	0	0	2.0
PIN	34	35	36	37	38	39	40	41	42	43	44
FM	0	0	0	0	0	4.7	2.2	1.9	4.7	0	0
AM	0	0	0	0	0	4.7	2.2	1.9	4.7	0	0

IC601: TA8207K

PIN	1	2	3	4	5	6	7	8	9	10	11	12
PLAY	8.15	4.25	8.46	4.7	0.6	0	0	0.6	0	4.2	8.1	8.98

IC401: TA8189N

PIN	1	2	3	4	5	6	7	8	9	10	11	12
A-PLAY	0	0	1.3	1.36	1.3	1.3	0	0	2	1.3	0	0
B-PLAY	0	0	1.3	1.36	1.35	0	0	0	2	1.3	0	0
NORMAL	0	1.2	1.26	1.3	1.3	1.26	0	0	2	1.3	0	0
HIGH	0	1.1	1.26	1.3	1.3	1.26	0	0	2	1.3	0	0
PIN	13	14	15	16	17	18	19	20	21	22	23	24
A-PLAY	0.85	0	1.3	2	1.44	6.0	0	1.35	1.35	1.26	0	0
B-PLAY	0.85	0	1.3	2	1.44	6.0	2.91	1.35	1.35	1.26	0	0
NORMAL	0.85	0	1.3	2	1.43	6.0	2.9	1.31	1.31	1.26	1.4	0
HIGH	0.85	0	1.3	2	1.43	6.0	2.9	1.31	1.31	1.26	1.4	0

IC301: TA78L 005/MC78L05AC

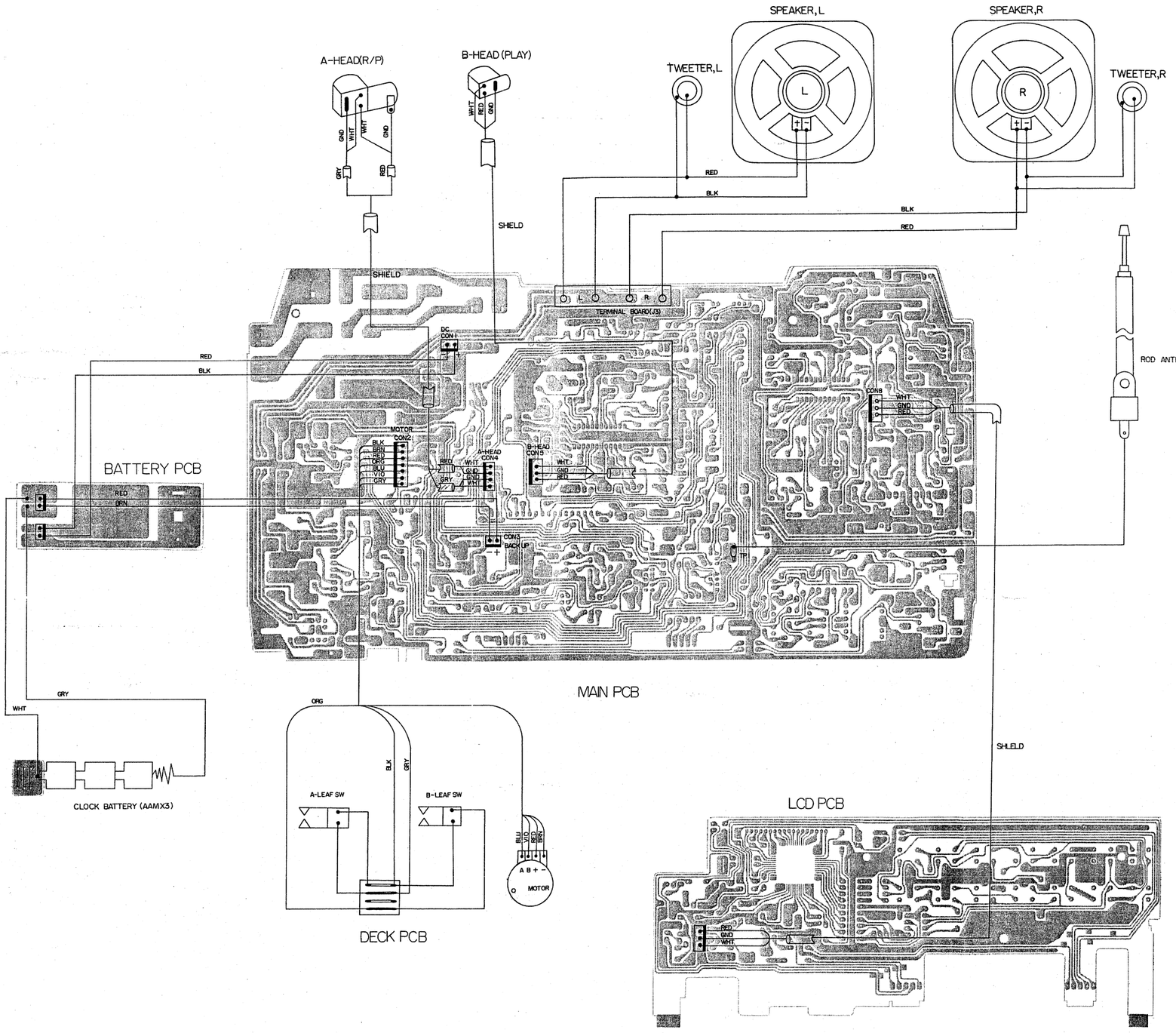
PIN	1	2	3
RADIO	8.84	0	5.14

TRANSISTOR

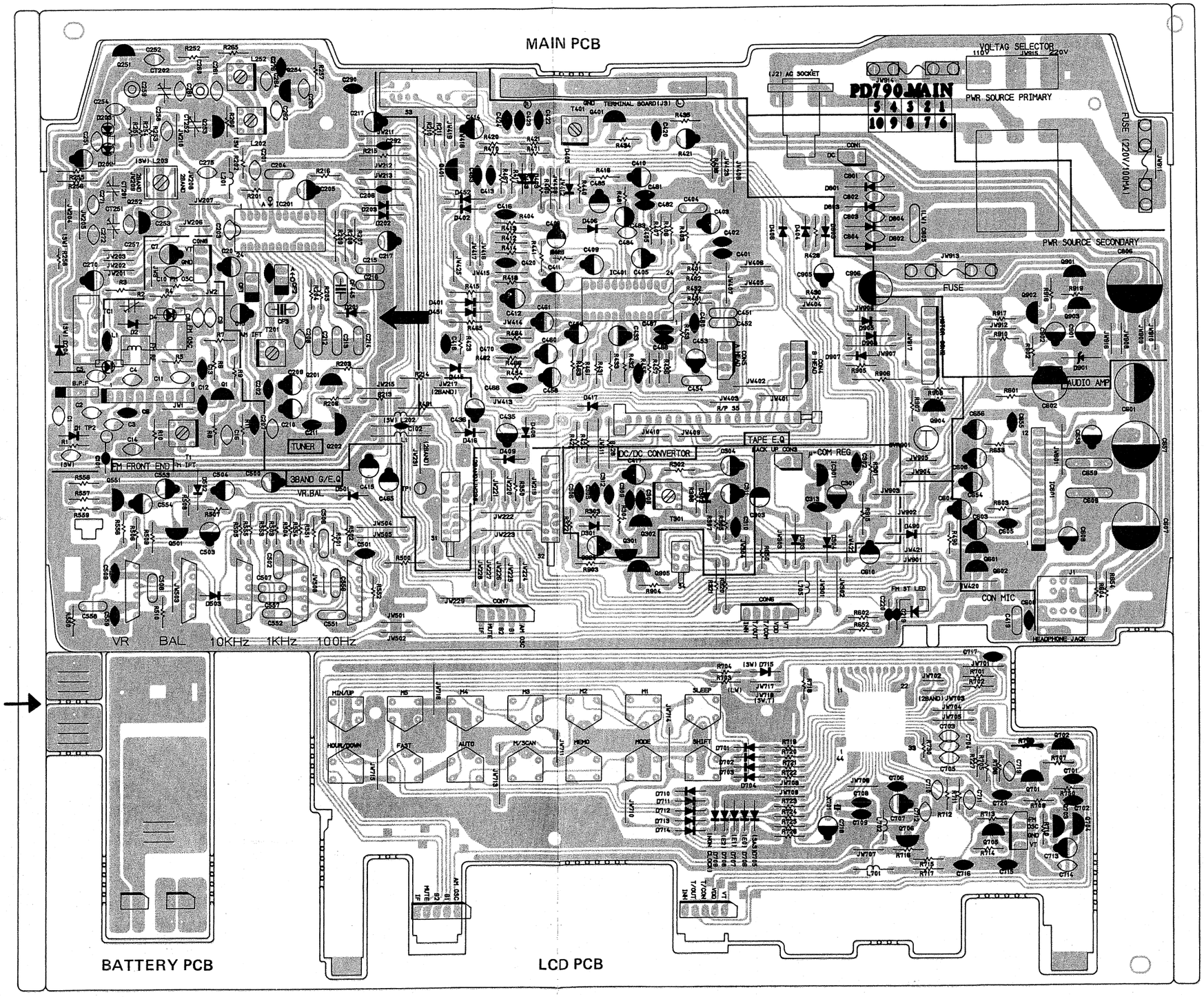
LOCA.NO.	Q301	Q302	Q1	Q201	Q202	Q401	Q402	Q901	Q903	Q902	Q905	Q501	Q551
	RADIO	RADIO	FM	FM	FM	REC	PLAY	PLAY	PLAY	PLAY	PLAY	RADIO	RADIO
E	0	0	3.5	0	0	0	0	8.2	6.06	0	5.1	0	0
B	0.3	0.68	4.16	0.22	0.6	0	0	8.9	6.7	0	5.1	0.4	0.55
C	0.7	3.45	4.1	0	0	5.47	5.5	8.9	8.8	8.9	0	0.4	0.63

E: Emitter
B: Base
C: Collector

■ WIRING DIAGRAM(PARTS SIDE)

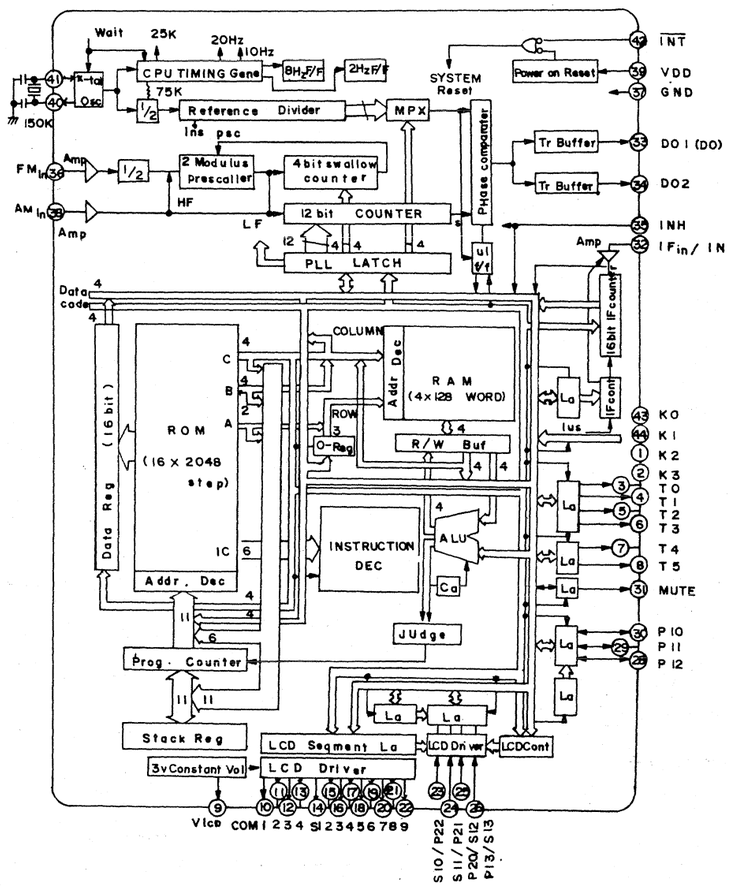


■ PCB PATTERN AND MARKING(PATTERN SIDE)

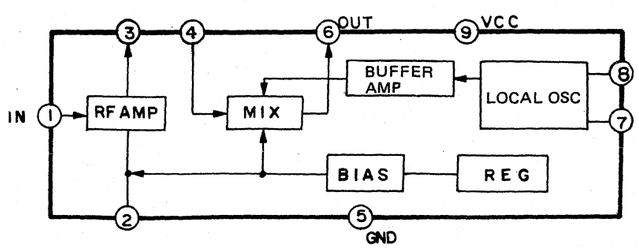


■ IC AND TRANSISTOR INTERNAL DIAGRAM

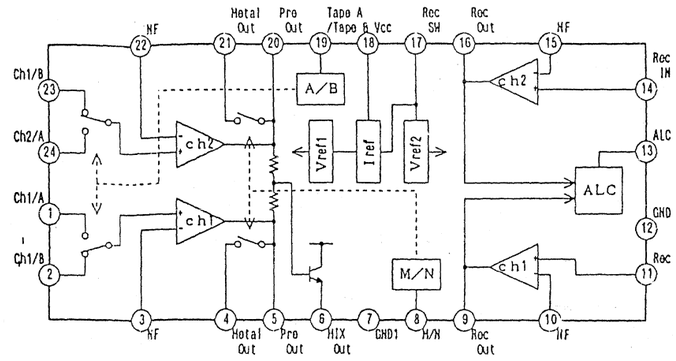
IC 701 TC9307AF-004: DTS CONTROLLER



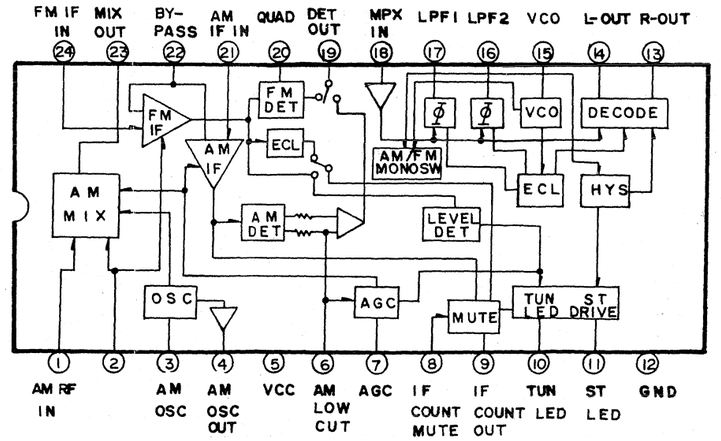
IC 1KA22495/TA7358AP: FM FRONT END



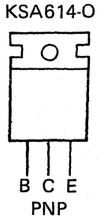
IC401 TA8189N: PRE/REC AMP



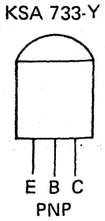
IC201 TA 8132N: TUNER

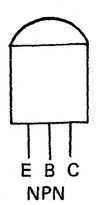


KSA614-O



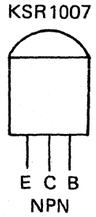
KSA 708-Y
KSA 733-Y



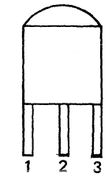


KSC1008-Y
KSC945-Y
KSC1674-O
KSC900L
KSD227-Y
KSC838-O
KSC1222-L

KSR1009
KSR1007

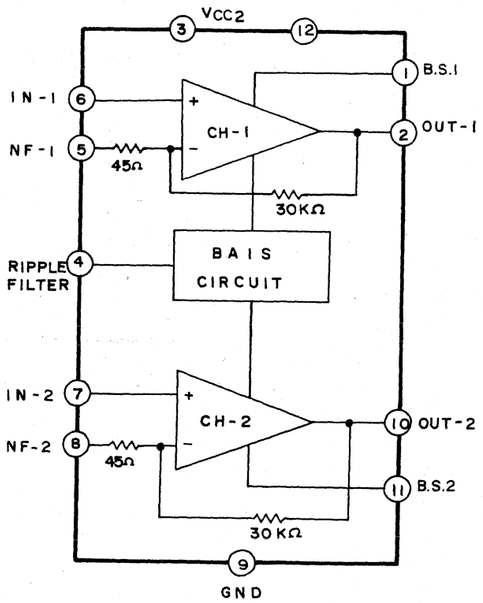


TA78L005/MC78L05AC
: IC301 (REGULATOR)

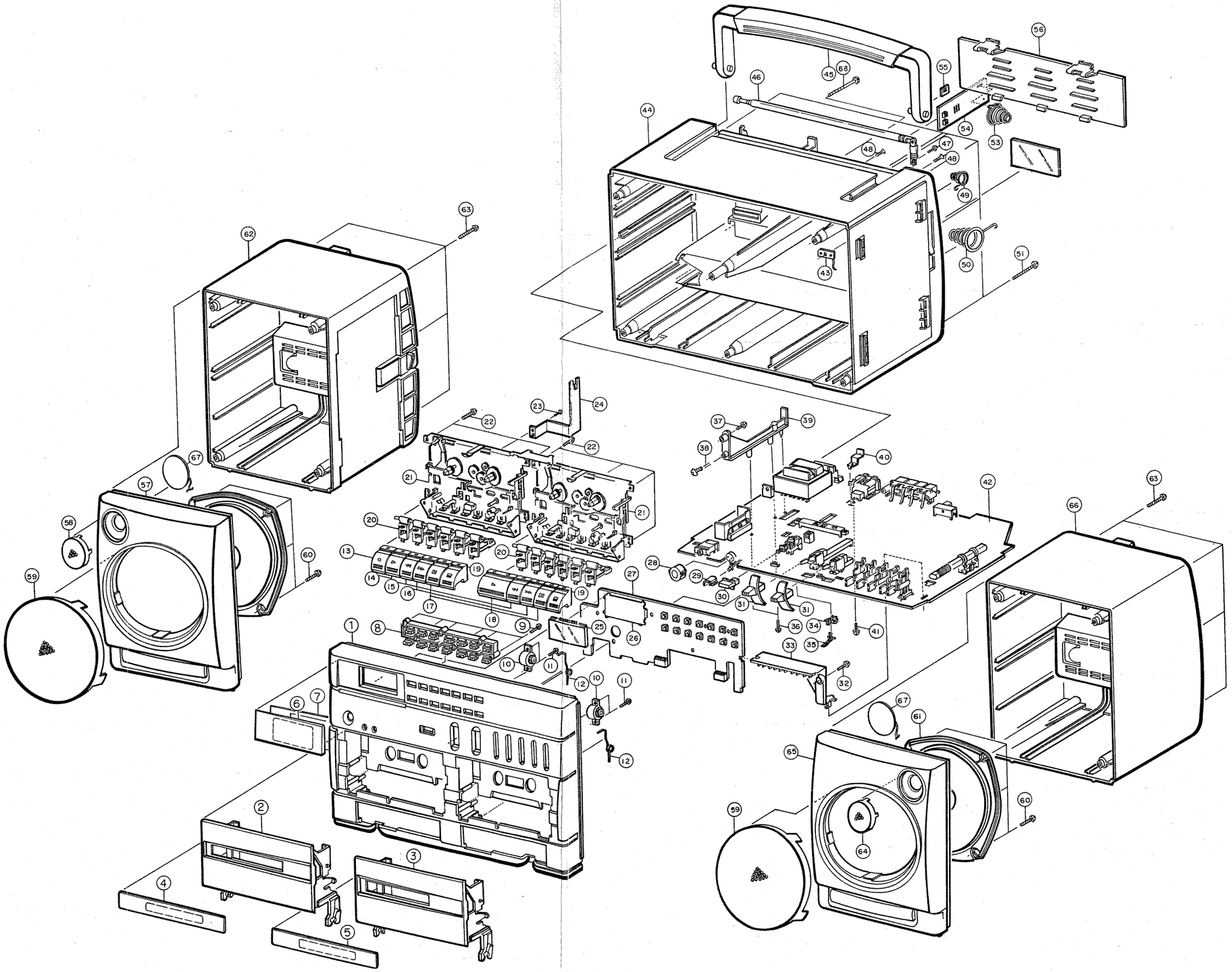


1. OUTPUT
2. GND
3. INPUT

IC601 TA8207K: POWER AMP

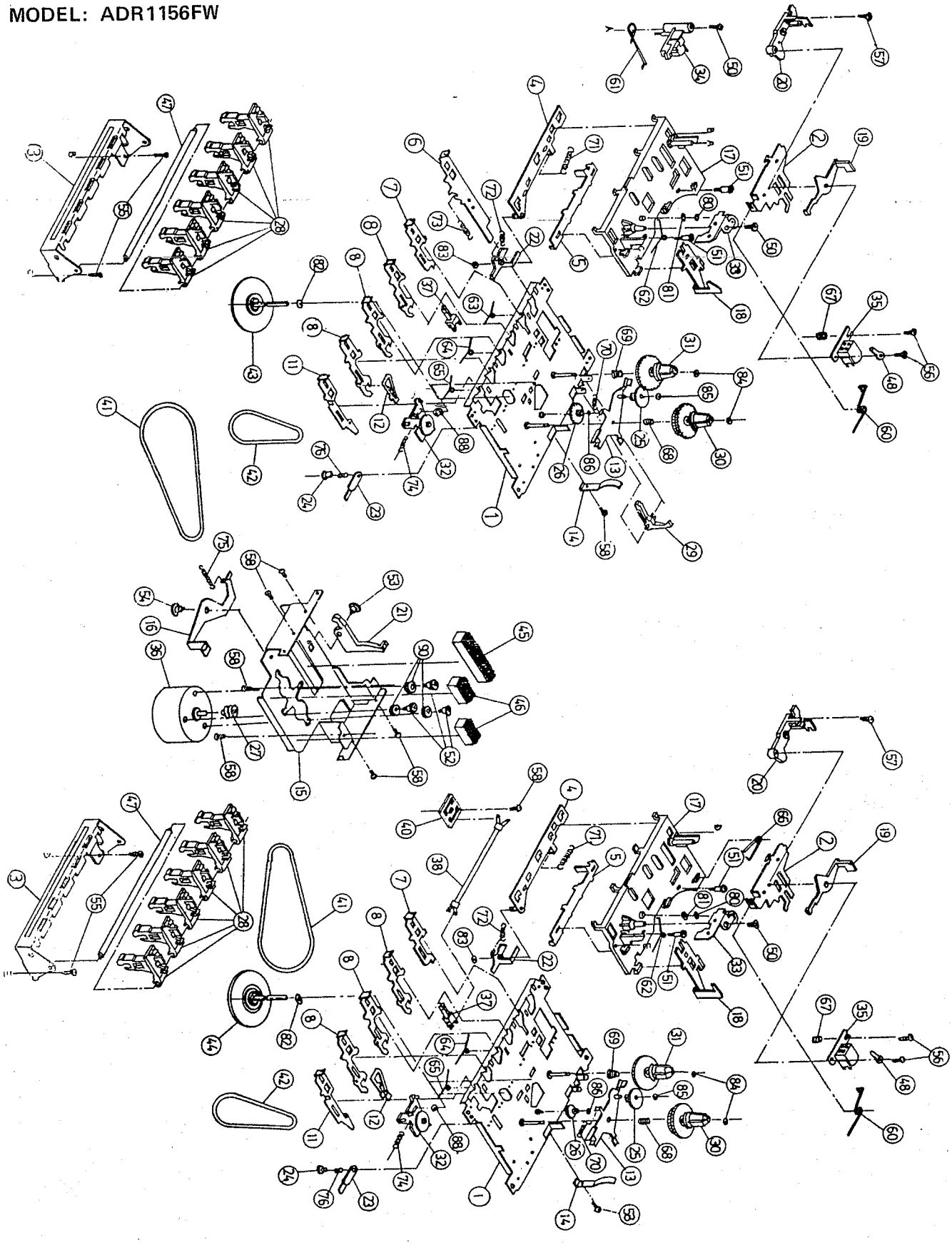


■ EXPLODED VIEW



DECK EXPLODED VIEW

MODEL: ADR1156FW



■ PARTS LIST

[SEMICONDUCTOR PARTS]

LOCATION.NO.	CODE NO.	DESCRIPTION	SPECIFICATION	NEW	REMARK
IC1	12119-202-870	FM FRONT END	KA22495		
IC1	12119-101-320	IC-FRONT END	TA7358AP		
IC201	12119-101-370	IC IF + MPX	TA8132N		
IC301	12119-601-160	IC-REGULATOR	TA78L005/MC78L05AC		
IC401	12109-401-840	IC-PRE/REC	TA8189N	★	
IC601	12119-101-290	IC-POWER AMP	TA8207K		
IC701	12119-101-570	DTS-IC	TC9307AF-004		
Q901 ⚠	12139-103-560	TRANSISTOR	KSA614-O		
Q905	12149-101-520	TRANSISTOR	KSA733-Y		
Q904	12149-101-560	TRANSISTOR	KSA708-Y		
Q1, 705, 301, 302	12149-301-810	TRANSISTOR	KSC1674-O		
Q703, 704	12149-301-820	TRANSISTOR	KSC1222-L		
Q501, 551, 401	12149-301-840	TRANSISTOR	KSC900-L		
Q701, 706, 702	12149-301-860	TRANSISTOR	KSC838-O		
Q903 ⚠	12149-301-930	TRANSISTOR	KSC1008-Y		
Q902	12149-401-160	TRANSISTOR	KSD227-Y		
Q601, 602	12159-301-790	TR DIGITAL	KSR1009		
Q201, 202, 401	12159-301-800	TR DIGITAL	KSR1007		
D2	12169-101-140	DIODE	1K 188FM-1PT		
D202, 203	12169-501-005	DIODE	KV1236		
D3, 4	12169-501-090	VVC DIODE	1SV101 2.4.4.5		
D801, 802, 803, 804 ⚠	12169-201-090	DIODE-RECTIFIER	1N4002		
D908	12169-201-090	DIODE-RECTIFIER	1N4002		
D901 ⚠	12169-404-100	DIODE-ZN	RD6. 8FB/UZP6.8B		
LED	12309-115-330	LED	KLR-124		
D1, 202, 203, 402	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		
D452, 406	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		
D401, 451, 408, 409	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		
D415, 416, 417, 404	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		
D301, 302, 303, 304	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		
D201, 403, 453, 490	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		
D903, 905, 907	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		
D701, 702, 703, 704	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		
D705, 711, 712, 713	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		
D714, 201	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		
D710, 707, 708, 501	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		OPTION
D502, 503	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		OPTION

[ELECTRICAL PARTS]

LOCATION NO.	CODE NO.	DESCRIPTION	SPECIFICATION	NEW	REMARK
VR	11239-115-050	VR-SLIDE SLIMA	RS15V12002 50KB x 2	★	VOLUME
100Hz, 1KHz, 10KHz	11239-115-060	VR-SLIDE SLIMA	RS15V12001 50KB x 2	★	EQUALIZER
BAL	11239-115-070	VR-SLIDE SLIMA	RS15V11001 50KW x 1	★	BALANCE
SVR901	11249-502-030	VR-SEMIMOLD	RVW6 FOR B 1K OHM		SPEED
TC1, CT202, CT251	11829-512-030	C-TRIMMER	TZ03R 20PF		
LCD	12339-104-540	DTS-LCD	SLA0620A/LE0405AP		2 BAND
LCD	12339-104-550	DTS-LCD	SLA0621A/LE0403AP		3 BAND
L201, 701, 702, 705	12429-411-100	COIL-CHOKE	LA02NA 100K(10μH)		
L3	12429-508-100	COIL-CHOKE	10μH		
L2	12450-612-031	COIL FM OSC	BOBBIN 2 1/4 TURN		FM OSC
L1	12450-615-821	COIL FM RF	BOBBIN 2 1/2 TURN		FM RF
T401	12619-012-811	COIL-SEVEN CAN	1R65HH I-BIAS		REC BIAS
T201	12619-030-005	COIL-CAN	AC 450KHz YEL		AM IFT
T301	12619-035-070	COIL-7M/M CAN	DC-CON 115μ Q80		DC CONVERTER
T1	12739-202-010	TRANS IF FM1	7M/M CAN		FM IFT
P/T ⚠	12869-210-810	TRANS-POWER	EI41MM 120V 60Hz		UL
P/T ⚠	12869-210-820	TRANS-POWER	EI41MM 120V 60Hz		CSA
P/T ⚠	12869-210-830	TRANS-POWER	EI41MM 220V 50Hz		VDE
P/T ⚠	12869-210-840	TRANS-POWER	EI41MM 240V 50Hz		BS
P/T ⚠	12869-210-850	TRANS-POWER	EI41MM 115/230V 60/50Hz		GENERAL
TP1, 2	13124-100-710	TAP-STUD	0.5T SPC1 BT2		
CLIP FUSE	13164-550-010	CLIP-FUSE	FC51E		OPTION
CORD ⚠	13053-806-611	POWER CORD SET	SPT-1 PEBAG UL, CSA		EP
CORD ⚠	13059-808-061	POWER CORD SET	KKP-419C/KKS-15 KLCE-2F		CP, VDE
CORD ⚠	13059-808-220	POWER CORD AC	KP560 LTSA-2F/KS-15 2M		AP
CORD ⚠	13059-808-080	POWER CORD AC	BS4491 KS-15 5.4FT BS		BS
J3	13303-500-610	TERMINAL-BOARD PUSH	4P PUSH TACK		
J1	13339-101-502	JACK-HEADPHONE	SHQ9085-01-142(GRN)		
S3	13519-930-440	SW-SLIDE	00430124 4C-3P		BEAT CUT
S5	13519-930-480	SLIDE SW	6C-2P 00620144		R/P SW
S4	13529-920-220	SWITCH-PUSH	R2320615 2C-2P		TIMER
S2	13549-801-440	SWITCH-LEVER	00440003 4C-4P	★	FUNCTION
J2 ⚠	13354-501-310	SOCKET-2P SW(EP)	HSC1463-01-0101(PIN)		OPTION
J2 ⚠	13354-501-320	SOCKET-2P SW (CP)	HSC1466-01-0101(PIN)		OPTION
TACT SW	13559-201-040	SW-TACT	KHH 15910		14EA
V/SEL ⚠	13599-502-020	VOLT SELECT	PCB 110V/220V		OPTION
V/SEL ⚠	13599-502-050	VOLT SELECT	PCB 110-127V/220-240V		OPTION
CON MIC	14219-500-610	MIC-CON	WM-54BY	★	
CF1	14529-301-420	FILTER CERAMIC	SFE 10.7MA5L-A		
CF2	14529-304-610	FILTER CERAMIC	AHCM2-450BL		
BPF	14529-403-010	FILTER-L, C	PFW-B4		
CF3	14529-601-040	DISCRIMINATOR	CDA 10.7MG18		
X701	14539-502-360	CRYSTAL	KF-38R 75KHz		
CF445	14539-504-050	RESONATOR	CSB 456 F18		

FM/AM BAND

LOCATION NO.	CODE NO.	DESCRIPTION	SPECIFICATION	NEW	REMARK
L201	12513-203-357	COIL-ANT ASSY	235 μH AR 8 x 80 25MM	*	AM ANT
L202	12619-047-203	COIL-CAN	AD 110 μH 796KHz RED		AM OSC
S1	13549-801-430	SWITCH-LEVER	00220010 2C-2P	*	BAND SW

FM/MW/LW BAND

LOCATION NO.	CODE NO.	DESCRIPTION	SPECIFICATION	NEW	REMARK
L201	12514-274-517	COIL-ANT ASSY	240 μH/25MH AR 8 x 100 25MM		MW/LW ANT
L252	12619-047-202	COIL-CAN	AD 510 μH 220KHz BRN		LW OSC
L202	12619-047-203	COIL-CAN	AD 110 μH 796KHz RED		MW OSC
S1	13549-801-450	SWITCH-LEVER	00430007 4C-3P		BAND SW
CT251, 252	11829-512-030	C-TRIMMER	TZ03R 20PF		
Q251, 252, 253, 254	12149-301-900	TRANSISTOR	KSC945-Y		

FM/SW/MW(AM) BAND

LOCATION NO.	CODE NO.	DESCRIPTION	SPECIFICATION	NEW	REMARK
L201	12513-203-357	COIL-ANT ASSY	235 μH AR 8 x 80 25MM	*	MW(AM) ANT
L252	12619-047-203	COIL-CAN	AD 110 μH 796KHz RED		MW(AM) OSC
S1	13549-801-450	SWITCH-LEVER	00430007 4C-3P		BAND SW
L202	12619-046-427	COIL-7MM CAN	7.96MHz 2.49 μH		SW OSC
CT251, 252	11829-512-030	C-TRIMMER	TZ03R 20PF		
L203	12450-514-291	COIL ANT SW	H-10 7.96MHz 1.43 μH		SW ANT
L202	12429-070-350	COIL-CHOKE	1.2 μH PI30 (LAL03AN 1R2M)		
D715	12169-301-290	DIODE SW	1SS53/1N4148 CT: 6PF		
Q251, 252, 253, 254	12149-301-900	TRANSISTOR	KSC945-Y		

[Deck Parts] ADR1156FW

NO.	CODE NO.	DESCRIPTION	SPECIFICATION	Q'TY
	14929-104-860	DECK ASSY	ADR1156FW	1
14	10000-252-029	PACK SPRING	51299-02506XC	2
18	10000-252-033	EJECT LEVER-F	11134-00340AA	2
19	10000-252-031	AUTO STOP LEVER	11134-00310AA	2
23	10000-252-021	PAUSE LOCK CAM	11116-00010AA	2
24	10000-252-023	CAP	11117-00020AA	2
25	10000-252-009	T.ROLLER GEAR	11128-00050AA	2
26	10000-252-015	FF GEAR	11128-00080AA	2
27	10000-252-034	MOTOR PULLEY-Y	11145-00450AA	1
28	10000-252-039	BUTTON KNOB BASE	11133-00010AA	12
29	10000-252-028	REC SAFETY LEVER	11134-01000AA	1
30	10000-252-011	TAKE UP REEL ASSY	ADR28-001	2
31	10000-252-012	SUPPLY REEL ASSY	ADR28-002	2
32	10000-252-007	RF LEVER ASSY	ADR22-001	2
33	10000-252-016	PINCH ROLLER ASSY	ADR26-001	2
34	10000-542-002	E-HEAD	PHK380-MS16A	1
35	10000-523-008	R/P HEAD	MS15R-AA2N1	2
36	10000-502-011	MOTOR	EG530YD9B	1
37	10000-252-030	LEAF SW	MSW17770M	2
41	10000-252-037	MAIN BELT	51424-05910BA	2
42	10000-252-024	SUB BELT	51424-03510BA	2
43	10000-252-006	FLY WHEEL ASSY-A	ADR15-002	1
44	10000-252-038	FLY WHEEL ASSY-B	ADR15-003	1

NOTE: Parts which are not described in the DECK list are not serviceable. If you need any other parts except those described, apply DECK ASSY (Only DECK ASSY is available).

[Mechanical Parts]

NO.	CODE NO.	DESCRIPTION	SPECIFICATION	Q'TY	NEW	REMARK
1	16000-530-410	CABINET FRONT	HIPS	1	*	SW BAND
1	16000-530-420	CABINET FRONT	HIPS	1	*	LW BAND
1	16000-530-430	CABINET FRONT	HIPS	1	*	TWO BAND
2	17642-528-710	DOOR CASSETTE, L	ABS	1	*	
3	17642-528-760	DOOR CASSETTE, R	ABS	1	*	
4	17654-561-910	WINDOW CASSETTE, L	PVC	1	*	
5	17654-561-960	WINDOW CASSETTE, R	PVC	1	*	
6	17643-523-910	WINDOW LCD	ACRYL	1	*	
7	16844-520-210	SHEET-CHUCK	HYMERON T0.5	1		
8	17622-503-410	KNOB DTS	ABS	1	*	
9	17148-526-081	SCREW-TAP, RH	2S-2.6 x 8 FE FZY	6		DTS KNOB
10	15214-506-011	DAMPER ASSY	ACETAL	2		
11	17458-130-121	SCREW-TAP TITE, BH	B-3 x 12 FE FZY	4		DAMPER
12	16674-570-710	EJECT SPRING	PWR	2		
13	17623-578-710	DECK KNOB REC	ABS	1	*	
14	17623-578-110	DECK KNOB PLAY, A	ABS	1	*	
15	17623-578-410	DECK KNOB REW	ABS	2	*	
16	17623-578-210	DECK KNOB FF	ABS	2	*	
17	17623-578-610	DECK KNOB PAUSE	ABS	2	*	
18	17623-578-310	DECK KNOB PLAY, B	ABS	1	*	
19	17623-578-510	DECK KNOB ST/EJT	ABS	2	*	
20	10000-252-039	BUTTON KNOB BASE	11133-00010AA	12		
21	14929-104-860	DECK ASSY	ADR1156FW	1		
22	17458-130-121	SCREW-TAP TITE, BH	B-3 x 12 FE FZY	5		DECK
23	17158-120-052	SCREW-TAP, BH	2-2 x 5 FE FZW	1		RECORD
24	16404-526-510	REC BRKT	SBHG	1	*	
25	12339-104-540	DTS-LCD	SLA0620A/LE0405AP	1		TWO BAND
25	12339-104-550	DTS-LCD	SLA0621A/LE0403AP	1		3 BAND
26	16134-510-210	SHIELD LCD	SPTE	1	*	
27	19070-004-620	ASSY-LCD PCB	PD790T 100K/10K	1	*	TWO BAND
27	19070-004-622	ASSY-LCD PCB	PD790S 50K/9K	1	*	SW BAND
27	19070-004-621	ASSY-LCD PCB	PD790L 50K/9K	1	*	LW BAND
28	16834-512-910	HOLDER-CONMIC	RUBBER	1		
29	16834-512-310	LED-HOLDER	RUBBER	1		
30	17624-622-210	KNOB PUSH	ABS	1	*	
31	17624-622-110	KNOB LEVER	ABS	2	*	

NO.	CODE NO.	DESCRIPTION	SPECIFICATION	Q'TY	NEW	REMARK
32	17458-130-121	SCREW-TAP TITE, BH	B-3 x 12 FE FZY	1		VOL HOLDER
33	16603-510-410	VOL HOLDER	ABS	1	*	
35	16604-538-710	REC-ASSY	ABS + ACETAL	1	*	
36	17458-230-101	SCREW-TAP TITE BH	2S 3 x 10 FE FZY	2		MOUNT HOLDER
37	17558-230-101	SCREW TAP BH SPEC	2S 3 x 10 FE FZY	1		MOUNT HOLDER
38	17458-230-101	SCREW-TAP TITE BH	2S 3 x 10 FE FZY	1		MOUNT HOLDER
39	16603-510-310	MOUNT HOLDER	ABS	1	*	
40	16404-526-610	AC BRKT	SBHG	1	*	
41	17048-126-081	SCREW-RH	+ M2.6 x 8 FE FZY	1		AC BRKT
42	19000-011-440	ASSY PCB	120V UL 100K/10K	1	*	TWO BAND
42	19000-014-920	ASSY PCB	115/230V 50K/9K	1	*	SW BAND
42	19000-014-950	ASSY PCB	220V 50K/9K	1	*	LW BAND
43	16624-513-310	BRKT-ANT	SPTE T0.3	1		
44	16000-530-510	CABINET-BACK	HIPS	1	*	DUAL
44	16000-530-520	CABINET-BACK	HIPS	1	*	SINGLE
45	17663-507-010	HANDLE	ABS	1	*	
46	14509-316-100	ANT-ROD	KDP-0224-A-O	1		
47	17098-130-085	SCREW-BH	+ M3 x 8 FE FN	1		ANTENNA
48	17118-530-123	SCREW-TAP FH	2S-3 x 12 FE FZB	2		
49	16674-552-510	SPRING BATTERY SB	SWP-PI0.7	1		
50	16674-560-230	SPRING BATTERY(PN)	SUS27	1		
51	17448-130-201	SCREW-TAP TITE RH	B-3 x 20 FE FZY	5		
53	16674-560-220	SPRING BATTERY, K	SWP PI1.0	1		
54	19070-004-623	ASSY-BATTERY PCB	PD790	1	*	
55	19070-004-624	ASSY-BATTERY PCB	PD790 BACK-UP	1	*	
56	17643-523-810	LID-BATTERY	HIPS	1	*	
57	16001-609-810	SPEAKER FRONT, L	HIPS	1	*	
58	17713-510-110	GRILLE SPEAKER TWEETER	SBHG	1	*	
59	17713-510-010	GRILLE SPEAKER WOOFER	SBHG	2	*	
60	17158-530-101	SCREW-TAP RH SPEC	2S-3 x 10 FE FZY	8		SPEAKER
61	14209-125-310	SPEAKER-GENERAL	1211 MF2	2		
62	16001-610-010	SPEAKER BACK, L	HIPS	1	*	
63	17448-130-201	SCREW-TAP TITE RH	B-3 x 20 FE FZY	8		
64	17713-510-120	GRILLE SPEAKER TWEETER	SBHG	1	*	
65	16001-609-910	SPEAKER FRONT, R	HIPS	1	*	
66	16001-610-110	SPEAKER BACK, R	HIPS	1	*	
67	14259-500-140	PIEZO TWEETER	BD27-20S PIEZO 150M/M	2		
68	17448-130-351	SCREW-TAP TITE RH	B-3 x 35 FE FZY	1		